

Appendix C.

Statistical Methodology

MAIL LIST MODEL

Classification analysis was performed to predict the probability that an addressee on the 1992 mail list operated a farm, and thereby separated the preliminary mail list into probable farm and probable nonfarm classes. The analysis was used to reduce the preliminary census mail list of 3.78 million records to a final mail list size of 3.55 million records. All 3.55 million addresses on the final mail list received a census of agriculture report form.

Records from the 1987 final census mail list were used to build a 1992 prediction model for the 1992 analysis. Classification and Regression Trees (CART) software analyzed characteristics of known 1987 farm and nonfarm operations to determine which were most useful in predicting farm and nonfarm classes. Record characteristics such as the source of the mail list record, number of source lists on which the record appeared, expected value of agricultural sales, and geographic location were used to separate mail list records into model groups. (Sources included the previous agriculture census mail list, the Internal Revenue Service administrative records, U.S. Department of Agriculture, and special commodity lists.) The proportion of 1987 census farm records in each model group was calculated to provide an estimate of the probability that an addressee in the group operated a farm.

After the model groups were defined, each address record on the 1992 preliminary mail list was assigned to a model group by matching record characteristics to model group characteristics. Records belonging to the groups with the highest farm probability were those more likely to be farms according to the classification tree methodology. The model, followed by analyst reviews, was used to remove 229,700 records from the preliminary mail list (those in model groups with the lowest farm probability), and thereby designated the 3.55 million records with the highest farm probability to receive the census report form. This procedure was used to obtain a more complete census enumeration of farm operations without excessive respondent burden and data collection cost.

CENSUS SAMPLE DESIGN

Each of the 3.55 million name and address records on the census mail list was designated to receive one of three different types of census report forms. The three forms were the nonsample form, the screener form, and the

sample form. Sections 1 through 20 and 27 through 32 of the sample form are identical to sections on the nonsample form. The sample form, sections 21 through 26, contains additional questions on usage of fertilizers and chemicals, farm production expenditures, value of machinery and equipment, value of land and buildings, and farm-related income. The screener form is identical to the nonsample form with questions added in section 1 to allow quick identification of nonfarm addresses. These three different forms were used to reduce the response burden of the census, while providing reliable information on a large number of data items.

The sample form was mailed to all mail list records in Alaska, Hawaii, and Rhode Island, and to a sample of records in other States selected from the final mail list. Addresses were selected into the sample with certainty (1) if they were expected to have large total value of agricultural products sold or large acreage, (2) if they were multiunit operations (i.e., separate farms in more than one location), (3) if they had other special characteristics, or (4) if they were in a county with less than 100 farms in 1987. Other addresses in counties containing 100 to 199 farms in 1987 were systematically sampled at a rate of 1 in 2, and other addresses in counties containing 200 farms or more in 1987 were systematically sampled at a rate of 1 in 6. This differential sampling scheme was used to provide reliable data for the sample sections of the report form for all counties. When a nonsample large farm was identified during processing, a supplemental form that contained the additional sample data inquiries was mailed.

To determine which mail list records would receive the screener form, all mail list records not designated for the sample were sorted by model group farm probability as specified by the mail list model. The 412,000 mail list records in the model groups with the lowest probability of being farms and with an expected total value of agricultural product sales less than \$25,000 were designated to receive the screener report form. The remaining mail list records received the nonsample report form.

CENSUS ESTIMATION

The 1992 Census of Agriculture used two types of statistical estimation procedures. These estimation procedures accounted for nonresponse to the data collection and for the sample data collection. These procedures are necessary because some farm operators never respond to

the census despite numerous attempts to contact them, and the estimates for the sample data are based on a sample of farm operators rather than a full enumeration.

Whole Farm Nonresponse Estimation

A statistical estimation procedure was used to account for nonrespondent farm operators to the census. We excluded large and unique farm operations that received intensive telephone followup during census processing, assuming complete response from them. A stratified systematic sample of remaining census nonrespondents were contacted by enumerators using a computer-assisted telephone interview system. Five sample strata were defined based on expected value of sales, previous census status, and whether the record was identified by the mail list model to receive the screener report form. The nonresponse survey telephone interview was designed to provide sufficient information to determine the farm status of each record.

In situations where the nonresponse survey case could not be contacted, the contact person refused to cooperate, or when no phone number could be obtained, a screener report form was sent by certified mail.

Estimates of the proportion of census nonrespondents that operated farms were made for each stratum in the State using survey results and applied to the total number of census nonrespondents in that stratum. The number of census nonrespondents that operated farms for each county by stratum was then derived. This estimation procedure is based on the assumption that the distribution of farms in a stratum by county is the same for census nonrespondents as for census respondents.

Certain census respondent farms which exhibited "rare" commodities were designated as "ineligible" to represent census nonrespondent farms and were excluded from the nonresponse weighting operation. The procedure explained below was performed with only the eligible respondent cases: Within each stratum in a county, a noninteger nonresponse weight was calculated and assigned to each eligible respondent farm record. The noninteger nonresponse weight is the ratio of the sum of the estimated number of nonrespondent farms from the nonresponse survey and the number of eligible census respondent farms to the number of eligible census respondent farms. Stratum controls were established to ensure that this weight was never greater than 2.0. The noninteger nonresponse weight was used in the calculation of the final weight for the sample items. The noninteger nonresponse weight was randomly rounded to an integer weight of either 1 or 2 for each record for tabulating the complete count items for publication.

Table A quantifies the effect of the nonresponse estimation procedure on selected census data items. The percentages in these tables are the percents of the census values contributed by nonresponse estimation. These indicate the potential for bias in published figures resulting from nonresponse to the census. The estimates provided

in these tables do not reflect the effect of item nonresponse to individual census data items. The effect of item nonresponse is discussed in the Census Nonsampling Error section.

Table A. Percent of State Totals Contributed by Whole Farm Nonresponse Estimation: 1992

Item	Percent of total
Farms	13.0
Land in farms.....acres	3.2
Estimated market value of land and buildings ¹\$1,000	3.0
Market value of agricultural products sold ..\$1,000	1.6
Harvested croplandacres	3.4
Corn for grain or seedacres	2.6
Wheat for grainacres	2.3
Livestock and poultry inventory:	
Cattle and calvesnumber	2.2
Hogs and pigsnumber	2.5
Hens and pullets of laying agenumber	—

¹Data are based on a sample of farms.

Sample Estimation

Sample data estimates the population totals that would have resulted from a complete census for the items in sections 21 through 26 of the sample report form. The estimates were obtained from a ratio estimation procedure that resulted in the assignment of a weight to each respondent record containing sample items. For any given county, a sample item total was estimated by multiplying the data items for each farm in the county by the corresponding sample weight and summing over all sample records in the county.

Each respondent sample farm was assigned a sample weight for use in producing estimates for all sample items. For example, if the weight given to a sample farm had the value 6, all sample data items reported by that farm would be multiplied by 6. The weight assigned to a sample certainty farm was 1.

Other than certainty farms, within a county, the ratio estimation procedure for farms was performed in three steps using three variables. The first variable contained eight 1992 total value of agricultural production (TVP) groups. Both the second and third variables, Standard Industrial Classification (SIC) code and farm acreage, contained two groups. The three sets of groups were as follows:

TVP	SIC	Acres
\$1 to \$999	01 All crops	1 to 69
\$1,000 to \$2,499	02 All livestock	70 or more
\$2,500 to \$4,999		
\$5,000 to \$9,999		
\$10,000 to \$24,999		
\$25,000 to \$49,999		
\$50,000 to \$99,999		
\$100,000 or more		

The first step in the estimation procedure was to classify the sample records into 32 mutually exclusive initial post strata formed by the three sets of groups. The total and sample farm counts were expanded to account for nonresponse. Each cell containing sample farm records was assigned an initial sample weight equal to the ratio of the total farm count to the sample farm count. This weight was approximately equal to the inverse of the probability of selecting a farm for the census sample.

The second step in the estimation procedure was to combine, if necessary, the 32 initial post strata to increase the reliability of the ratio estimation procedure. Any stratum that contained less than 10 sample farms after nonresponse adjustment or had a weight greater than two times the mail sample rate was collapsed with another stratum. The mail sample rate was either 2 or 6, depending on whether the county had a 1 in 2 or 1 in 6 sample selection rate. The collapsing occurred within the initial 32 post strata according to a specified collapsing pattern. After the collapsing process was completed, new total farm counts and sample farm counts were computed from each of the final post strata and were used to calculate final sample weights.

The final step consisted of assigning the noninteger final post stratum weight to the sample farm records in each post stratum. The weight is the ratio of total farm count to sample farm count in each final post stratum. The noninteger sample weight, the product of the noninteger final post stratum weight and the nonresponse weight, was randomly rounded to an integer weight for tabulation. If, for example, the final weight for the farms in a particular post stratum was 7.2, then 0.2 or one-fifth of the sample farms in this post stratum were randomly assigned a weight of 8 and the remaining four-fifths received a weight of 7.

CENSUS SAMPLING ERROR

The sample for the 1992 Census of Agriculture is only one of a large number of possible samples of the same size that could have been selected using the same sample design. Sample refers to the sample for both the nonresponse survey and the selection of farms to receive the sample report forms. Estimates derived from all the possible samples would differ from each other only by random variation.

The standard error or sampling error of a survey estimate is a measure of the variation among the estimates from all possible samples and thus is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. The percent relative standard error of an estimate is defined as 100 times the standard error of the estimate divided by the value of the estimate.

If all possible samples were selected, each of the samples were surveyed under essentially the same conditions, and an estimate and its standard error were calculated from each sample, then:

1. Approximately 90 percent of the intervals from 1.65 standard errors below the estimate to 1.65 standard errors above the estimate would include the average value of all possible samples.
2. Approximately 95 percent of the intervals from 1.96 standard errors below the estimate to 1.96 standard errors above the estimate would include the average value of all possible samples.

The following example illustrates the computations necessary for producing a confidence interval for an estimate. Assume that the estimate of number of farms for a State is 94,382 and the relative standard error of the estimate is .1 percent (0.001). Multiplying 94,382 by 0.001 yields 94, the standard error; therefore, a 90-percent confidence interval is 94,227 to 94,537 (i.e., 94,382 plus or minus 1.65 x 94). If corresponding confidence intervals were constructed for all possible samples of the same size and design, approximately 90 percent of these intervals would contain the figure obtained from a complete enumeration. Similarly, a 95-percent confidence interval is 94,198 to 94,566 (i.e., 94,382 plus or minus 1.96 x 94).

Census items were classified as either complete count or sample count items. Complete count items were asked of all farm operators. Examples of complete count items were land in farms, harvested cropland, livestock inventory and sales, crop acreage, quantities harvested and crop sales, land use, irrigation, government loans and payments, conservation acreage, type of organization, and operator characteristics.

Sample count items were asked only of a sample of farm operators. These items appeared only in sections 21 through 26 of the sample report form. Sample count items were included under the following section headings: commercial fertilizers, chemicals, production expenses, farm machinery and equipment, value of land and buildings, and farm-related income.

Variability, measured as percent relative standard error, in the estimates of complete count items is due only to the nonresponse survey estimation procedure. Variability in the estimates of sample count items is due to both the nonresponse survey estimation procedure and the census sample selection and estimation procedure. Thus, variability in the sample count item estimates tends to be larger than the variability in the complete count item estimates.

Table B provides the generalized reliability estimates of the estimated number of farms in a county reporting complete count and sample count items. The top half of the table shows the percent relative standard error for estimated number of farms in a county reporting a complete count item and the bottom half a sample count item. These are derived from regression equations. Separate regression equations were used for complete count items and sample count items. Each regression equation was fit with the estimated number of farms in a county reporting an item as the independent variable and the relative variance of that estimate as the dependent variable for all counties in the State. For sample count items, only data

from counties sampled at a rate of 1 in 6 are used in the estimation of the regression equation.

Table B. Reliability Estimates for Number of Farms in a County Reporting a Complete Count Item or Sample Count Item: 1992

Farms	Relative standard error of estimate (percent)
COMPLETE COUNT ITEM	
Number of farms reporting:	
25	5.8
50	3.9
75	3.0
100	2.4
150	1.6
200	1.1
300	.9
500	.7
750	.6
1,000	.5
1,500	.4
2,000	.3
SAMPLE COUNT ITEM	
Number of farms reporting:	
25	39.4
50	27.7
75	22.5
100	19.4
150	15.6
200	13.4
300	10.7
500	7.9
750	6.0
1,000	4.8
1,500	3.2
2,000	1.9

To illustrate the use of this table, assume that the estimate of the number of farms reporting hogs and pigs for a particular county, as given in county table 15, is 89. Since hogs and pigs is a complete count data item, refer to the first part of table B and use the estimated percent relative standard error of the estimate from the row with farm count equal to or just less than the estimated number of farms, 89. For this example, the percent relative standard error of the estimate comes from the row for 75 farms reporting. For sample count items, follow the same procedure using the second part of table B. For counties with fewer than 100 farms in the 1987 Census of Agriculture, variability in sample count item estimates comes only from nonresponse survey estimation procedures; thus, the estimated relative standard error for a sample count item in these counties may be obtained using the first part of table B.

Table C presents the percent relative standard error of selected State data items for all farms, and table D presents the percent relative standard error of selected State data items for all farms with sales of \$10,000 or more.

Table E presents the percent standard error for percent change in State totals from 1987 to 1992. The general

purpose of the percent change estimate is to provide a relative measure of the difference in a characteristic between censuses. The relative change for a given characteristic is defined as the ratio of the difference of the 1992 and the 1987 estimate for that characteristic to the 1987 estimate. This ratio is multiplied by 100 to obtain the percent change. The percent standard error of a percent change estimate, then, is the standard error of the ratio multiplied by 100.

Table F presents the percent relative standard error for State and county totals for selected data items. The percent relative standard error of the estimate for the same item differs among counties in the State. Reasons for this are differences among counties in (1) the total number of farms, (2) the number of large farms included with certainty, (3) the size classifications of the farms sampled, (4) the amount of nonresponse, (5) the general agricultural characteristics, and (6) the specific characteristic being measured.

CENSUS NONSAMPLING ERROR

The accuracy of the census counts are affected jointly by sampling errors, described in the previous section, and nonsampling errors. Extensive efforts were made to compile a complete and accurate mail list for the census, to design an understandable report form with instructions, and to minimize processing errors through the use of quality control measures on specific operations. Nonsampling errors arise from incompleteness of the census mail list, duplication in the mail list, incorrect data reporting, errors in editing of reported data, and errors in imputation for missing data. These specific nonsampling errors are further discussed in this section. Evaluation studies will be conducted to measure the extent of certain nonsampling errors such as coverage error and classification error.

Census Coverage

The main objective of the census of agriculture is to obtain a complete and accurate enumeration of U.S. farms with accurate data on all aspects of the agricultural operation. However, the high cost and availability of resources for enumeration place restrictions on feasible data collection methodologies. The past six agriculture censuses have been conducted by mail enumeration with telephone contact for selected nonrespondents. The completeness of such an enumeration thus depends to a large extent on the coverage of farm operations by the census mail list.

The past five censuses of agriculture have included approximately 91 percent of farms in the United States and approximately 96 percent of agriculture production. Complete enumeration of agricultural operations satisfying the farm definition of \$1,000 or more in agricultural sales is complicated by fluctuations in agricultural operations qualifying for enumeration, the variety of arrangements under which farms are operated, the multiplicity of names used

by an operation, the number of operations in which an operator participates, the accuracy of data reporting, and other factors. A new mail list is compiled for each census because no current single list of agricultural operations is comprehensive.

An evaluation of census coverage has been conducted for each census of agriculture since 1945. The evaluation provides estimates of the completeness of census farm count and major census data items. In addition, the evaluation helps to identify problems in the census enumeration and provide information that can form the basis for improvements. The results of the 1992 Coverage Evaluation program will be published in volume 2, Subject Series (Part 2): Coverage Evaluation.

The evaluation of coverage for the 1992 census was designed to measure four components of error in the census mail list and in farm classification. Mail list error includes two components of error, a measurement of farms not on the census mail list (undercount) and a measurement of farms enumerated more than once in the census (overcount). Classification error includes two components of error, a measurement of farms classified as nonfarms in the census (undercount) and of nonfarms classified as farms in the census (overcount). Classification error arises from reporting and processing errors. Mail list undercount dominates all coverage errors. Net coverage error is defined as the difference between undercounted and overcounted farms. Measurements of these errors, as well as a description of the complete coverage program, will be available in the Coverage Evaluation report.

Mail List Coverage

A major problem with mail enumeration for the census of agriculture is the difficulty encountered in compiling a complete mail list. The percentage of farms included on the census mail list varies considerably by State. Several reasons have contributed to farm operator names not being included on the census mail list—the operation may have been started after the mail list was developed, the operation may be so small as not to appear in any of the agriculture-related source lists used in compiling the census list, or the operation may have been falsely classified as a nonfarm prior to mailout. A large proportion of the farms not included on the mail list are small in both acres and sales of agricultural products.

The 1992 Census of Agriculture Coverage Evaluation used the area segment sample of the 1992 June Agricultural Survey (JAS) of the National Agricultural Statistical Service (NASS) to estimate farms not on the census mail list. The Census Bureau contracted with NASS to augment the JAS data collection. The survey data collected by NASS will be protected under the confidentiality of title 13, U.S. Code. These JAS survey records were matched to the census mail list. Records that did not match were mailed a census of agriculture report form to estimate mail list

coverage. Estimates of farms not on the census mail list are computed using a capture-recapture dual frame estimator which will be described in the Coverage Evaluation report mentioned earlier.

Table G provides coverage evaluation estimates for one component of coverage error associated with the census of agriculture; that is, the error due to farms not on the census mail list. Also provided are estimates of selected characteristics of farms not on the mail list, estimates of characteristics of farms not on the mail list as a percentage of total farms in the State, and the percent relative standard error associated with each estimate. The estimate of total farms in the State is based on census farm count plus the estimated number of farms not on the census mail list. This estimate of total farms in the State was not adjusted for the components of error associated with classification and list duplication error. Estimates of these errors will be made at the regional, rather than the State level, and will be provided in the Coverage Evaluation report mentioned earlier.

Respondent and Enumerator Error

Incorrect or incomplete responses to the mailed census report form or to the questions posed by a telephone enumerator introduce error into the census data. Such incorrect information can lead, in some cases, to incorrect classification of farms. This type of reporting error is measured by the Classification Error Survey discussed later in this section. To reduce all types of reporting error, detailed instructions for completing the report form were provided to each addressee. Questions were phrased as clearly as possible based on tests of the census report form and each respondent's answers were checked for completeness and consistency.

Item Nonresponse

As information flows from data collection to tabulation, various types of item nonresponses are identified on the report forms. Nonresponse to particular questions on the report form that logically should be present may create a type of nonsampling error in both complete count and sample count data. When information from reporting farms is used to edit or impute for item nonresponse, the data may be biased due to characteristics of the nonreporting respondents differing from those reporting the item. Any attempt to correct the data items may not completely reflect this difference either at the element level (individual farm operation) or on the average.

Processing Error

All phases of processing for each report form are sources for the introduction of nonsampling error. The processing of the report forms includes clerical screening for farm activity, computerized check-in of report forms and follow-up of nonrespondents, keying and transmittal of

completed report forms, computerized editing of inconsistent and missing data, review and correction of individual records referred from the computer edit, review and correction of tabulated data, and electronic data processing. These operations undergo a number of quality control checks to ensure as accurate an application as possible, yet some errors are not detected and corrected.

Classification Error

An evaluation study of classification errors was conducted in the 1992 Census of Agriculture as part of the census coverage evaluation program. A sample of census mail list respondents was selected, and these addresses were reenumerated to determine whether they were a farm or nonfarm. A farm status determination was made based on the evaluation report form and compared with the census farm status which was based on the data reported on the report form. Differences in status were reconciled.

In past censuses, the proportion of farms undercounted due to classification errors was higher for farms with small values of sales. For the 1987 census, the classification error rate was higher for (1) farms with small values of sales, (2) farms with a small number of acres, (3) full-owner farms than part-owner or tenant farms, (4) operators with principal occupation other than farming, and (5) males than females. Results from the 1992 Classification Error Survey will be published in the Coverage Evaluation report.

EDITING DATA AND IMPUTATION FOR ITEM NONRESPONSE

The Census of Agriculture Complex Edit and Imputation System performs the following functions:

- Ensuring reasonable relationships between/among data items, values for various sizes of farms, and combinations of commodities.
- Ensuring necessary consistencies are present. There are more than 70 distinct consistency requirements.
- Ensuring geographic, legal, and physical constraints are met.

The system must perform these and similar functions for 900 data keycodes for sample records and 850 data keycodes for nonsample records.

For the 1992 Census of Agriculture, as in previous censuses, all reported data were keyed and then edited by computer. The edits were used to determine whether the reports met the minimum criteria to be counted as farms in the census. The complex edit and imputation system provided the basis for deciding to accept, impute (supply), delete, or alter the reported value for each data record item.

Whenever possible, edit imputations, deletions, and changes were based on component or related data on the respondent's report form. For some items, such as operator characteristics, data from the previous census were used when available. Values for other missing or unacceptable reported data items were calculated based on reported quantities and known price parameters.

When these and similar methods were not available and values had to be supplied, the imputation process used information reported for another farm operation in a geographically adjacent area with characteristics similar to those of the farm operation with incomplete data. For example, a farm operation that reported acres of corn harvested, but did not report quantity of corn harvested, was assigned the same bushels of corn per acre harvested as that of the last nearby farm with similar characteristics that reported acceptable yields during that particular execution of the computer edit. The imputation for missing items in each section of the report form was conducted separately; thus, assigned values for one operation could come from more than one respondent.

Prior to the imputation operation, a set of default values and relationships were assigned to the possible imputation variables. The relationships and values varied depending on the item being imputed. For example, different default values were assigned for several standard industrial classification and total value of sales categories when imputing hired farm labor expenses. These values and item relationships for the possible imputation variables were stored in the computer in a series of matrices.

Each execution of the computer edit consisted of records from only one State. The computer records were sorted by reported State and county. For a given execution of the edit, the stored entries in the various matrices were retained in memory only until a succeeding record having acceptable characteristics for some sections of the report form was processed by the computer. Then the acceptable responses of the succeeding operation replaced those previously stored. When a record processed through the edit had unreported or unacceptable data, the record was assigned the last acceptable ratio or response from an operation with a similar set of characteristics. Once each execution of the computer edit for a State was completed, the possible imputation variables were reset to the default values and relationships for subsequent executions.

After the initial computer edit, keyed reports not meeting the census farm definition were reviewed to ensure that the data were keyed correctly. Edit referrals were generated for about 25 percent of the reports included as farms; they were reviewed for keying accuracy to ensure that the computer edit actions were correct. If the results of the computer edit were not acceptable, corrections were made and the record was reedited.

Table C. Reliability Estimates of State Totals for All Farms: 1992

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)	Item	Total	Relative standard error of estimate (percent)		
F FARMS AND LAND IN FARMS							
Farms ----- number-----	77 669	.9	F FARM PRODUCTION EXPENSES¹				
Land in farms ----- acres-----	28 978 997	.2	Total farm production expenses ----- farms-----	77 663	1.0		
Average size of farm ----- acres-----	373	.9	\$1,000-----	13 804 983	.2		
M MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD							
Total sales (see text) ----- farms-----	77 669	.9	Average per farm ----- dollars-----	177 755	1.0		
\$1,000-----	17 051 912	.1	Livestock and poultry purchased ----- farms-----	13 769	1.7		
Average per farm ----- dollars-----	219 546	.9	\$1,000-----	935 152	.4		
Farms by value of sales:			Feed for livestock and poultry ----- farms-----	25 147	1.3		
Less than \$1,000 (see text) ----- farms-----	15 058	1.1	\$1,000-----	2 108 719	.2		
\$1,000-----	2 689	1.3	Commercially mixed formula feeds ----- farms-----	10 552	1.9		
\$1,000 to \$2,499 ----- farms-----	7 634	1.2	\$1,000-----	1 137 098	.2		
\$1,000-----	12 534	1.2	Seeds, bulbs, plants, and trees ----- farms-----	18 581	1.5		
\$2,500 to \$4,999 ----- farms-----	7 160	1.1	\$1,000-----	274 495	.3		
\$1,000-----	25 377	1.1	Commercial fertilizer ----- farms-----	42 602	1.1		
\$5,000 to \$9,999 ----- farms-----	7 417	1.1	\$1,000-----	568 772	.4		
\$1,000-----	52 445	1.1	Agricultural chemicals ----- farms-----	45 721	1.1		
\$10,000 to \$19,999 ----- farms-----	6 962	1.2	\$1,000-----	694 549	.4		
\$1,000-----	98 773	1.2	Petroleum products ----- farms-----	66 759	1.0		
\$20,000 to \$24,999 ----- farms-----	2 362	1.4	\$1,000-----	414 984	.4		
\$1,000-----	51 963	1.4	Electricity ----- farms-----	55 124	1.1		
\$25,000 to \$39,999 ----- farms-----	4 724	1.4	\$1,000-----	500 264	.4		
\$1,000-----	147 996	1.4	Hired farm labor ----- farms-----	38 347	1.1		
\$40,000 to \$49,999 ----- farms-----	2 175	1.5	\$1,000-----	2 922 390	.2		
\$1,000-----	96 056	1.5	Contract labor ----- farms-----	25 785	1.4		
\$50,000 to \$99,999 ----- farms-----	6 360	1.4	\$1,000-----	967 377	.5		
\$1,000-----	451 127	1.4	Repair and maintenance ----- farms-----	60 113	1.0		
\$100,000 to \$249,999 ----- farms-----	7 170	1.1	\$1,000-----	630 574	.4		
\$1,000-----	1 137 783	1.1	Customwork, machine hire, and rental of machinery and equipment ----- farms-----	27 174	1.3		
\$250,000 to \$499,999 ----- farms-----	3 973	1.1	\$1,000-----	448 923	.6		
\$1,000-----	1 402 752	1.1	Interest expense ----- farms-----	29 185	1.2		
\$500,000 or more ----- farms-----	6 674	1.1	\$1,000-----	738 910	.5		
\$1,000-----	13 572 418	1.1	Secured by real estate ----- farms-----	21 166	1.5		
Sales by commodity or commodity group:			\$1,000-----	476 714	.7		
Crops, including nursery and greenhouse crops ----- farms-----	47 374	.9	Not secured by real estate ----- farms-----	13 621	1.5		
\$1,000-----	11 747 474	.2	\$1,000-----	262 196	.4		
Grains ----- farms-----	5 291	.9	Cash rent ----- farms-----	14 392	1.5		
\$1,000-----	595 526	.5	\$1,000-----	492 662	.5		
Corn for grain ----- farms-----	675	.9	Property taxes ----- farms-----	69 894	1.0		
\$1,000-----	64 502	.4	\$1,000-----	291 385	.7		
Wheat ----- farms-----	2 220	.6	All other farm production expenses ----- farms-----	71 882	1.0		
\$1,000-----	133 704	.3	\$1,000-----	1 815 826	.3		
Soybeans ----- farms-----	2	24.0	NET CASH RETURN FROM AGRICULTURAL SALES FOR THE FARM UNIT (SEE TEXT)¹				
Sorghum for grain ----- farms-----	(D)	(D)	All farms ----- number-----	77 663	1.0		
\$1,000-----	47	2.7	\$1,000-----	3 179 111	.4		
Barley ----- farms-----	(D)	(D)	Average per farm ----- dollars-----	40 935	1.1		
\$1,000-----	809	1.0	Farms with net gains ² ----- number-----	36 612	1.1		
Oats ----- farms-----	27 618	.5	\$1,000-----	3 555 458	.3		
\$1,000-----	324	1.6	Average net gain ----- dollars-----	97 112	1.2		
Other grains ----- farms-----	3 705	1.0	Farms with net losses ----- number-----	41 051	1.2		
\$1,000-----	2 957	1.1	\$1,000-----	376 347	1.3		
Cotton and cottonseed ----- farms-----	364 875	.7	Average net loss ----- dollars-----	9 168	1.8		
\$1,000-----	2 350	.5	GOVERNMENT PAYMENTS AND OTHER FARM-RELATED INCOME				
Tobacco ----- farms-----	986 353	.1	Government payments ----- farms-----	6 992	.8		
\$1,000-----	-	-	\$1,000-----	174 196	.5		
Hay, silage, and field seeds ----- farms-----	6 274	.8	Other farm-related income ¹ ----- farms-----	13 197	1.9		
\$1,000-----	515 480	.3	\$1,000-----	242 310	2.2		
Vegetables, sweet corn, and melons ----- farms-----	3 713	.8	Customwork and other agricultural services ----- farms-----	4 655	2.9		
\$1,000-----	2 674 985	(L)	\$1,000-----	99 504	3.3		
Fruits, nuts, and berries ----- farms-----	33 984	.9	Gross cash rent or share payments ----- farms-----	5 382	3.0		
\$1,000-----	4 989 913	.3	\$1,000-----	103 609	3.5		
Nursery and greenhouse crops ----- farms-----	3 824	1.0	Forest products and Christmas trees ----- farms-----	1 049	7.0		
\$1,000-----	1 661 762	.1	\$1,000-----	9 077	20.0		
Other crops ----- farms-----	1 165	.7	Other farm-related income sources ----- farms-----	3 854	3.2		
\$1,000-----	323 456	.2	\$1,000-----	30 121	3.3		
Livestock, poultry, and their products ----- farms-----	25 614	.8	COMMODITY CREDIT CORPORATION LOANS				
\$1,000-----	5 304 438	.1	Total ----- farms-----	1 632	1.2		
Poultry and poultry products ----- farms-----	2 060	1.0	\$1,000-----	175 676	.6		
\$1,000-----	1 083 998	(L)					
Dairy products ----- farms-----	2 511	.3					
\$1,000-----	2 415 173	(L)					
Cattle and calves ----- farms-----	17 205	.8					
\$1,000-----	1 580 381	.1					
Hogs and pigs ----- farms-----	1 761	1.2					
\$1,000-----	49 214	.5					
Sheep, lambs, and wool ----- farms-----	3 385	1.0					
\$1,000-----	52 197	.2					
Other livestock and livestock products (see text) ----- farms-----	6 460	1.1					
\$1,000-----	123 475	.6					
Value of agricultural products sold directly to individuals for human consumption (see text) ----- farms-----	5 229	1.0					
\$1,000-----	35 967	.5					

See footnotes at end of table.

1992 CENSUS OF AGRICULTURE

APPENDIX C C-7

Table C. Reliability Estimates of State Totals for All Farms: 1992 —Con.

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)	Item	Total	Relative standard error of estimate (percent)				
LAND IN FARMS ACCORDING TO USE									
Total cropland	farms--	64 417	.9	All operators	farms--	77 669	.9		
	acres--	10 479 268	.4		acres--	28 978 997	.2		
Harvested cropland	farms--	56 785	.9	Full owners	farms--	56 559	.9		
	acres--	7 760 773	.3	Part owners	farms--	9 378 173	.4		
Farms by acres harvested:				Tenants	farms--	11 471	.7		
1 to 9 acres	farms--	20 702	1.0		acres--	13 832 035	.2		
	acres--	73 512			acres--	9 639	1.0		
10 to 19 acres	farms--	7 996	1.2		acres--	5 768 789	.3		
20 to 29 acres	farms--	110 543	1.2	OWNED AND RENTED LAND					
	acres--	4 531		Land owned	farms--	68 332	.9		
30 to 49 acres	farms--	103 000	1.3		acres--	16 701 349	.4		
	acres--	5 641		Owned land in farms	farms--	68 030	.9		
50 to 99 acres	farms--	211 047	1.3		acres--	14 498 892	.3		
	acres--	5 683		Land rented or leased from others	farms--	21 259	.8		
100 to 199 acres	farms--	392 841	1.1		acres--	14 934 835	.2		
	acres--	4 539			landlords--	48 263	.6		
200 to 499 acres	farms--	630 834	.9	Rented or leased land in farms	farms--	21 110	.8		
	acres--	4 173			acres--	14 480 105	.2		
500 to 999 acres	farms--	1 294 054	.6	TENURE OF OPERATOR					
	acres--	2 005		All operators	farms--	77 669	.9		
1,000 acres or more	farms--	1 385 690	.2		acres--	28 978 997	.2		
	acres--	1 515		Full owners	farms--	56 559	.9		
		3 559 252		Part owners	farms--	9 378 173	.4		
				Tenants	farms--	11 471	.7		
Cropland:					acres--	13 832 035	.2		
Pasture or grazing only	farms--	11 743	.9	OPERATOR CHARACTERISTICS					
	acres--	1 226 708	.8	Operators by place of residence:					
Other cropland	farms--	13 495	.8	On farm operated					
	acres--	1 491 787	.5		farms--	51 485	.9		
Total woodland	farms--	4 656	1.0	Not on farm operated					
	acres--	1 150 247	.5		farms--	22 096	1.0		
Pastureland and rangeland other than cropland and woodland pastured	farms--	12 852	.8	Not reported					
	acres--	16 191 472			farms--	4 088	.9		
Land in house lots, ponds, roads, wasteland, etc.	farms--	38 534	.9	INJURIES AND DEATHS					
	acres--	1 158 010		Farm-related injuries:					
Irrigated land	farms--	56 546	.9	Operator and family members	farms--	530	1.1		
	acres--	7 571 313	.3	Hired workers	number--	705	.9		
Acres irrigated:				Hired workers	farms--	3 436	.4		
1 to 9 acres	farms--	20 780	1.0		number--	11 568	.1		
	acres--	75 664	.8	HIRED FARM LABOR					
10 to 49 acres	farms--	18 137	1.2	Hired workers by days worked:					
	acres--	419 808		150 days or more	farms--	21 207	1.2		
50 to 99 acres	farms--	5 546	1.1		workers--	182 287	.4		
	acres--	383 918		Less than 150 days	farms--	33 237	1.2		
100 to 199 acres	farms--	4 514	1.1		workers--	495 607	.8		
	acres--	626 169		AGRICULTURAL CHEMICALS¹					
200 to 499 acres	farms--	4 142	.6	Farm-related deaths:					
	acres--	1 281 558		Operator and family members	farms--	15	6.1		
500 to 999 acres	farms--	1 974	.2	Hired workers	number--	15	6.1		
	acres--	1 365 645			number--	17	-		
1,000 acres or more	farms--	1 453	.1		number--	23	-		
	acres--	3 418 551	(L)	VALUE OF LAND AND BUILDINGS¹					
Harvested cropland irrigated	farms--	50 686	.9	Estimated market value of land and buildings	farms--	77 663	1.0		
	acres--	7 026 146	.3	\$1,000--	63 688 517				
Pasture and other land irrigated	farms--	8 847	.9		820 063	1.2			
	acres--	545 167	.5	Average per farm	dollars--	2 213	1.0		
Land under federal acreage reduction programs:				Average per acre	dollars--				
Diverted under annual commodity programs	farms--	2 604	.6						
	acres--	91 691	.2	VALUE OF MACHINERY AND EQUIPMENT¹					
Conservation Reserve or Wetlands Reserve Programs	farms--	618	1.3	Estimated market value of all machinery and equipment	farms--	77 245	1.0		
	acres--	198 981	1.0	\$1,000--	4 363 190				
				Average per farm	dollars--	56 485	1.1		
				Average per acre	dollars--				
INJURIES AND DEATHS									
HIRED FARM LABOR									
AGRICULTURAL CHEMICALS¹									
Commercial fertilizer	farms--	42 089	1.1	Farm-related injuries:					
	acres on which used--	6 462 299	.5	Operator and family members	farms--	530	1.1		

See footnotes at end of table.

C-8 APPENDIX C

1992 CENSUS OF AGRICULTURE

Table C. Reliability Estimates of State Totals for All Farms: 1992 —Con.

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)	Item	Total	Relative standard error of estimate (percent)	
F FARMS BY SIZE						
1 to 9 acres	farms--	21 485	Cattle and calves sold	farms--	17 205	
	acres--	82 740	number--	2 993 538	.1	
10 to 49 acres	farms--	26 089	\$1,000--	1 580 381	.1	
	acres--	610 793	farms--	2 221	1.2	
50 to 69 acres	farms--	4 000	number--	258 130	.4	
	acres--	230 212	Hogs and pigs sold	farms--	1 761	
70 to 99 acres	farms--	3 934	number--	481 270	.4	
	acres--	320 736	\$1,000--	49 214	.5	
100 to 139 acres	farms--	3 352	Sheep and lambs of all ages inventory	farms--	3 692	
	acres--	385 942	number--	859 835	1.0	
140 to 179 acres	farms--	2 597	Sheep and lambs sold	farms--	3 095	
	acres--	407 823	number--	674 278	.2	
180 to 219 acres	farms--	1 799	Horses and ponies inventory	farms--	14 972	
	acres--	356 360	number--	124 919	1.0	
220 to 259 acres	farms--	1 259	Horses and ponies sold	farms--	4 171	
	acres--	298 740	number--	14 225	1.1	
260 to 499 acres	farms--	4 454	POULTRY			
	acres--	1 602 297	Chickens 3 months old or older inventory	farms--	3 592	
500 to 999 acres	farms--	3 702	number--	33 253 782	1.1	
	acres--	2 594 539	Hens and pullets of laying age	farms--	3 544	
1,000 to 1,999 acres	farms--	2 411	number--	31 231 488	(L)	
2,000 acres or more	farms--	3 320 414	Broilers and other meat-type chickens sold	farms--	298	
	acres--	2 587	number--	225 074 862	1.7	
		18 768 401			.1	
F FARMS BY STANDARD INDUSTRIAL CLASSIFICATION						
Cash grains (011)	farms--	2 462	CROPS HARVESTED			
	acres--	1 559 195	Corn for grain or seed	farms--	731	
Field crops, except cash grains (013)	farms--	4 613	acres--	148 616	.5	
	acres--	2 785 236	bushels--	23 818 559	.5	
Vegetables and melons (016)	farms--	2 534	Corn for silage or green chop	farms--	1 717	
	acres--	1 379 469	acres--	218 113	.3	
Fruits and tree nuts (017)	farms--	.3	tons, green--	4 956 718	.2	
	acres--	3 524 607	Wheat for grain	farms--	2 236	
Horticultural specialties (018)	farms--	3 319	acres--	569 044	.6	
	acres--	178 692	bushels--	39 456 581	.3	
General farms, primarily crop (019)	farms--	868	Barley for grain	farms--	933	
	acres--	1 011 795	acres--	204 119	1.0	
Livestock, except dairy, poultry, and animal specialties (021)	farms--	15 853	bushels--	12 183 472	.5	
	acres--	16 465 533	Rice	farms--	1 575	
Dairy farms (024)	farms--	2 373	acres--	401 194	1.6	
	acres--	838 615	cwt--	31 865 036	1.0	
Poultry and eggs (025)	farms--	1 059	Cotton	farms--	2 351	
	acres--	78 095	acres--	1 066 060	.1	
Animal specialties (027)	farms--	6 905	bales--	2 792 443	.1	
	acres--	454 628	Dry edible beans, excluding dry limas	farms--	690	
General farms, primarily livestock and animal specialties (029)	farms--	458	acres--	79 735	.6	
	acres--	703 132	cwt--	1 547 626	.6	
			Irish potatoes	farms--	265	
			acres--	46 461	.3	
			cwt--	16 287 266	.3	
			acres--	153 432	.2	
			tons--	4 130 361	.2	
L LIVESTOCK						
Cattle and calves inventory	farms--	19 097	Hay—alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (see text)	farms--	9 286	
	number--	4 702 114	acres--	1 531 230	.7	
Beef cows	farms--	13 105	tons, dry--	7 567 342	.4	
	number--	862 971	Alfalfa hay	farms--	4 879	
Milk cows	farms--	3 124	acres--	939 097	.3	
	number--	1 249 038	tons, dry--	5 879 133	.3	
			Farmers harvested for sale (see text)	farms--	3 713	
			acres--	1 016 744	.8	
			Land in orchards	farms--	40 298	
			acres--	2 245 781	.9	
					.4	

¹Data are based on a sample of farms.

²Farms with total production expenses equal to market value of agricultural products sold are included as farms with gains of less than \$1,000.

**Table D. Reliability Estimates of State Totals for Farms With Sales of \$10,000 or More:
1992**

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)	Item	Total	Relative standard error of estimate (percent)
F FARMS AND LAND IN FARMS					
Farms ----- number	40 400	.9	Total farm production expenses ----- farms	40 412	1.0
Land in farms ----- acres	25 806 758	.2	\$1,000-----	13 549 310	.2
Average size of farm ----- acres	639	.9	Average per farm ----- dollars	335 279	1.0
M MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD					
Total sales (see text) ----- farms	40 400	.9	Livestock and poultry purchased ----- farms	7 047	1.9
\$1,000-----	16 958 868	.1	\$1,000-----	919 992	.4
Average per farm ----- dollars	419 774	.9	Feed for livestock and poultry ----- farms	10 698	1.4
Farms by value of sales:			Commercial mixed formula feeds ----- farms	2 084 597	.2
\$10,000 to \$19,999 ----- farms	6 962	1.2	\$1,000-----	5 420	2.0
\$1,000-----	98 773	1.2	Seeds, bulbs, plants, and trees ----- farms	1 133 132	.2
\$20,000 to \$24,999 ----- farms	2 362	1.4	\$1,000-----	14 107	1.4
\$1,000-----	51 963	1.4	Commercial fertilizer ----- farms	272 861	.3
\$25,000 to \$39,999 ----- farms	4 724	1.4	\$1,000-----	28 818	1.2
\$1,000-----	147 996	1.4	Agricultural chemicals ----- farms	559 452	.4
\$40,000 to \$49,999 ----- farms	2 175	1.5	\$1,000-----	31 060	1.1
\$1,000-----	96 056	1.5	Petroleum products ----- farms	684 241	.4
\$50,000 to \$99,999 ----- farms	6 360	1.4	\$1,000-----	37 381	1.0
\$1,000-----	451 127	1.4	Electricity ----- farms	399 998	.4
\$100,000 to \$249,999 ----- farms	7 170	1.1	\$1,000-----	33 801	1.1
\$1,000-----	1 137 783	1.1	Hired farm labor ----- farms	486 613	.4
\$250,000 to \$499,999 ----- farms	3 973	—	\$1,000-----	27 863	1.1
\$1,000-----	1 402 752	—	Contract labor ----- farms	2 910 569	.2
\$500,000 or more ----- farms	6 674	—	\$1,000-----	18 283	1.4
\$1,000-----	13 572 418	—	Repair and maintenance ----- farms	958 014	.5
Sales by commodity or commodity group:			\$1,000-----	35 019	1.0
Crops, including nursery and greenhouse crops ----- farms	32 321	1.0	Secured by real estate ----- farms	601 641	.4
\$1,000-----	11 697 619	.2	\$1,000-----	15 104	1.5
Grains ----- farms	4 859	.9	Not secured by real estate ----- farms	449 707	.7
\$1,000-----	593 890	.5	\$1,000-----	11 689	1.5
Corn for grain ----- farms	660	.9	\$1,000-----	260 043	.4
\$1,000-----	64 472	.4	Cash rent ----- farms	11 933	1.5
Wheat ----- farms	2 081	.6	\$1,000-----	489 126	.5
\$1,000-----	133 156	.3	Property taxes ----- farms	35 511	1.0
Soybeans ----- farms	2	.24.0	\$1,000-----	241 821	.7
\$1,000-----	(D)		All other farm production expenses ----- farms	40 395	1.0
Sorghum for grain ----- farms	47	.2.7	\$1,000-----	1 787 112	.3
\$1,000-----	(D)		NET C NET CASH RETURN FROM AGRICULTURAL SALES FOR THE FARM UNIT (SEE TEXT) ¹		
Barley ----- farms	732	.9	Farms with net gains ² ----- number	30 313	1.1
\$1,000-----	27 378	.5	\$1,000-----	3 544 212	.3
Oats ----- farms	256	1.5	Average net gain ----- dollars	116 921	1.2
\$1,000-----	3 522	1.0	Farms with net losses ----- number	10 099	2.1
Other grains ----- farms	2 811	1.1	\$1,000-----	202 694	1.7
\$1,000-----	364 238	.7	Average net loss ----- dollars	20 071	2.7
Cotton and cottonseed ----- farms	2 294	.5	GOVERNMENT PAYMENTS AND OTHER FARM-RELATED INCOME		
\$1,000-----	986 100	.1	Government payments ----- farms	5 974	.8
Tobacco ----- farms	—	—	\$1,000-----	169 926	.4
\$1,000-----	—	—	Other farm-related income ¹ ----- farms	8 196	2.1
Hay, silage, and field seeds ----- farms	4 663	.8	\$1,000-----	218 184	2.2
\$1,000-----	510 913	.3	Customwork and other agricultural services ----- farms	3 169	3.1
Vegetables, sweet corn, and melons ----- farms	3 090	.7	\$1,000-----	96 209	3.4
\$1,000-----	2 673 082	(L)	Gross cash rent or share payments ----- farms	3 010	3.4
Fruits, nuts, and berries ----- farms	22 031	1.0	\$1,000-----	87 537	3.5
\$1,000-----	4 952 140	.3	Forest products and Christmas trees ----- farms	436	9.9
Nursery and greenhouse crops ----- farms	2 875	.9	\$1,000-----	6 711	26.4
\$1,000-----	1 658 223	.1	Other farm-related income sources ----- farms	2 918	3.4
Other crops ----- farms	1 104	.7	\$1,000-----	27 726	3.4
\$1,000-----	323 272	.2	COMMODITY CREDIT CORPORATION LOANS		
Livestock, poultry, and their products ----- farms	11 543	.7	Total ----- farms	1 566	1.2
\$1,000-----	5 261 249	.1	\$1,000-----	175 314	.6
Poultry and poultry products ----- farms	889	.9			
\$1,000-----	1 083 195	(L)			
Dairy products ----- farms	2 434	.3			
\$1,000-----	2 414 918	(L)			
Cattle and calves ----- farms	8 958	.7			
\$1,000-----	1 553 678	.1			
Hogs and pigs ----- farms	576	1.5			
\$1,000-----	47 353	.5			
Sheep, lambs, and wool ----- farms	1 030	1.1			
\$1,000-----	49 611	.2			
Other livestock and livestock products (see text) ----- farms	2 061	1.2			
\$1,000-----	112 494	.6			
Value of agricultural products sold directly to individuals for human consumption (see text) ----- farms	1 689	1.1			
\$1,000-----	31 667	.5			

See footnotes at end of table.

C-10 APPENDIX C

1992 CENSUS OF AGRICULTURE

**Table D. Reliability Estimates of State Totals for Farms With Sales of \$10,000 or More:
1992—Con.**

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)	Item	Total	Relative standard error of estimate (percent)			
LAND IN FARMS ACCORDING TO USE								
Total cropland	farms-- acres--	36 163 .9 9 677 153 .3	Farms by type of organization	farms-- acres--	26 428 12 504 581 1.0 3			
Harvested cropland	farms-- acres--	34 217 .9 7 528 885 .3	Partnership	farms-- acres--	8 786 7 502 652 .8 .2			
Cropland:			Corporation:					
Pasture or grazing only	farms-- acres--	4 657 .9 864 236 .7	Family held	farms-- acres--	3 806 4 362 291 .5 .1			
Total woodland	farms-- acres--	1 830 1 841 085 1.0 .4	More than 10 stockholders	farms-- acres--	191 3 615 .9 .5			
Pastureland and rangeland other than cropland and woodland pastured	farms-- acres--	5 844 14 372 923 .7 .1	10 or less stockholders	farms-- acres--	3 615 597 .5 1.0			
Land in house lots, ponds, roads, wasteland, etc.	farms-- acres--	19 092 915 597 .9 .4	Other than family held	farms-- acres--	725 784 250 .9 .2			
Irrigated land	farms-- acres--	33 745 7 317 288 .9 .3	More than 10 stockholders	farms-- acres--	128 597 .4 1.0			
Harvested cropland irrigated	farms-- acres--	32 112 6 867 014 .3 .3	10 or less stockholders	farms-- acres--	597 652 984 .5 .3			
Pasture and other land irrigated	farms-- acres--	3 504 450 274 .9 .5	Other—cooperative, estate or trust, institutional, etc.	farms-- acres--	655 652 984 1.4 .3			
Land under federal acreage reduction programs:			Hired farm labor					
Diverted under annual commodity programs	farms-- acres--	2 548 91 177 .5 .2	Hired workers by days worked:					
Conservation Reserve or Wetlands Reserve Programs	farms-- acres--	448 158 194 1.2 .5	150 days or more	farms-- workers--	17 982 178 766 1.1 .4			
VALUE OF LAND AND BUILDINGS¹			Less than 150 days	farms-- workers--	23 148 470 331 1.3 .8			
Estimated market value of land and buildings	farms-- \$1,000--	40 412 52 684 550 1.0 .7	INJURIES AND DEATHS					
Average per farm	dollars--	1 303 686 2 054 1.2 1.0	Farm-related injuries:					
Average per acre	dollars--		Operator and family members	farms-- number--	361 525 1.0 .8			
VALUE OF MACHINERY AND EQUIPMENT¹			Hired workers	farms-- number--	3 243 11 339 .4 .1			
Estimated market value of all machinery and equipment	farms-- \$1,000--	40 372 3 885 871 1.0 .5	Farm-related deaths:					
Average per farm	dollars--	96 252 1.2	Operator and family members	farms-- number--	11 (D) 6.6			
AGRICULTURAL CHEMICALS¹			Hired workers	farms-- number--	17 (D) — (D) 6.6			
Commercial fertilizer	farms-- acres on which used--	28 711 6 337 310 1.2 .5	FARMS BY SIZE					
TENURE OF OPERATOR			1 to 9 acres	farms--	3 895 13 161 1.2 1.2			
All operators	farms-- acres--	40 400 25 806 758 .9 .2	10 to 49 acres	farms--				
Full owners	farms-- acres--	24 621 7 692 092 1.0 .3	50 to 69 acres	farms--	2 711 2 809 1.2 1.2			
Part owners	farms-- acres--	8 753 12 775 635 .6 .1	70 to 99 acres	farms--				
Tenants	farms-- acres--	7 026 5 339 031 1.0 .2	100 to 139 acres	farms--	2 446 1 922 1.0 .9			
OWNED AND RENTED LAND			140 to 179 acres	farms--	1 377 977 1.1 1.0			
Land owned	farms-- acres--	33 599 14 267 229 .9 .3	180 to 219 acres	farms--				
Owned land in farms	farms-- acres--	33 374 12 556 527 .9 .3	220 to 259 acres	farms--	3 491 3 106 .8 .6			
Land rented or leased from others	farms-- acres-- landlords--	15 869 13 657 303 40 240 1.8 .2	260 to 499 acres	farms--				
Rented or leased land in farms	farms-- acres--	15 779 13 250 231 .8 .2	500 to 999 acres	farms--				
Land rented or leased to others	farms-- acres--	4 094 2 117 774 .8 .7	1,000 to 1,999 acres	farms--	2 096 2 409 .7 —			
OPERATOR CHARACTERISTICS			2,000 acres or more	farms--				
Operators by place of residence:			FARMS BY STANDARD INDUSTRIAL CLASSIFICATION					
On farm operated		23 183 15 119 2 098 .9 1.0 .8	Cash grains (011)	farms--	2 107 3 287 1.5 .9			
Not on farm operated			Field crops, except cash grains (013)	farms--	2 081 20 311 .8 1.0			
Not reported			Vegetables and melons (016)	farms--				
Operators by principal occupation:			Fruits and tree nuts (017)	farms--				
Farming		27 960 12 440 .8 1.2	Horticultural specialties (018)	farms--	2 490 567 1.0 .7			
Other			General farms, primarily crop (019)	farms--				
Operators by days worked off farm:			Livestock, except dairy, poultry, and animal specialties (021)	farms--	5 498 2 320 .9 .3			
Any		17 299 9 996 1.1 1.2	Dairy farms (024)	farms--	641 1 055 .8 1.5			
200 days or more			Poultry and eggs (025)	farms--				
Operators by sex:			Animal specialties (027)	farms--				
Male		37 005 3 395 .9 1.2	General farms, primarily livestock and animal specialties (029)	farms--	43 3.9			
Female				farms-- number--				
Average age of operator	years--	54.6 1.2	LIVESTOCK					

See footnotes at end of table.

**Table D. Reliability Estimates of State Totals for Farms With Sales of \$10,000 or More:
1992—Con.**

[For meaning of abbreviations and symbols, see introductory text]

Item	Total	Relative standard error of estimate (percent)	Item	Total	Relative standard error of estimate (percent)
POULTRY					
Chickens 3 months old or older inventory	farms--	785	Barley for grain	farms--	834
number--		.1	acres--	200	.5
Hens and pullets of laying age	farms--	766	bushels--	12 057	.5
number--		(L)	Rice	farms--	1 521
Broilers and other meat-type chickens sold	farms--	176	acres--	399	1.5
number--		225 036 884	cwt--	31 807	1.0
CROPS HARVESTED					
Corn for grain or seed	farms--	706	Cotton	farms--	2 294
acres--		.9	acres--	1 065	.5
bushels--		.5	bales--	2 791	.1
Corn for silage or green chop	farms--	1 629	Dry edible beans, excluding dry limas	farms--	654
acres--		.5	acres--	79	.9
tons, green--		216 948	cwt--	507	.6
Wheat for grain	farms--	4 940 244	Irish potatoes	farms--	1 543
acres--		.6	acres--	243	.6
bushels--		.3	cwt--	46 440	.2
		.3	Sugar beets for sugar	farms--	16 284
			acres--	715	.3
			tons--	153 387	.6
			Hay—alfalfa, other tame, small grain, wild, grass	farms--	4 129
			silage, green chop, etc. (see text)	acres--	064
				farms--	373
				acres--	.7
				tons, dry--	1 463
				tons, dry--	553
				farms--	.3
				acres--	7 430
				tons, dry--	321
				acres--	.3
				farms--	4 049
				acres--	.7
				tons, dry--	924
				acres--	128
				farms--	.3
				acres--	5 836
				tons, dry--	182
				acres--	.3
				farms--	.7
				acres--	1 015
				farms--	621
				acres--	.1
				tons, dry--	21
				acres--	926
				farms--	1.0
				acres--	.4
				tons, dry--	.4

¹Data are based on a sample of farms.

²Farms with total production expenses equal to market value of agricultural products sold are included as farms with gains of less than \$1,000.

Table E. Reliability Estimates of Percent Change in State Totals: 1987 to 1992

[For meaning of abbreviations and symbols, see introductory text]

Item	All farms		Farms with sales of \$10,000 or more	
	Percent change from 1987 to 1992	Standard error of estimate	Percent change from 1987 to 1992	Standard error of estimate
Farms-----number--	-6.7	.9	-5.7	.9
Land in farms -----acres--	-5.3	.3	-7.0	.2
Average size of farm -----acres--	1.4	1.1	-1.2	1.0
Estimated market value of land and buildings ¹ :				
Average per farm -----dollars--	40.5	2.1	37.2	2.1
Average per acre -----dollars--	40.5	2.0	40.7	2.1
Estimated market value of all machinery and equipment ¹ :				
Average per farm -----dollars--	14.8	1.7	14.2	1.6
Farms by size:				
1 to 9 acres -----	-5.3	1.2	-4.1	1.3
10 to 49 acres -----	-8.5	1.1	-4.6	1.3
50 to 179 acres -----	-7.6	1.0	-7.3	1.1
180 to 499 acres -----	-6.4	.9	-7.9	.8
500 to 999 acres -----	-2.7	.8	-3.8	.7
1,000 to 1,999 acres -----	-5.2	.8	-7.6	.7
2,000 acres or more -----	-1.6	(L)	-3.2	-
Total cropland -----farms--	-5.6	.9	-5.6	1.0
	acres--	.4	-3.9	.3
Harvested cropland -----farms--	-4.2	1.0	-4.8	1.0
	acres--	.3	1.4	.3
Irrigated land -----farms--	-3.9	.9	-4.6	1.0
	acres--	.3	-3.3	.3
Market value of agricultural products sold -----\$1,000--	22.5	.2	22.8	.2
Average per farm -----dollars--	31.2	1.3	30.2	1.3
Crops, including nursery and greenhouse crops -----\$1,000--	26.7	.3	27.0	.2
Livestock, poultry, and their products -----\$1,000--	14.0	.1	14.3	.1
Farms by value of sales:				
Less than \$2,500 -----	-2.1	.8	(X)	(X)
\$2,500 to \$4,999 -----	-17.3	1.1	(X)	(X)
\$5,000 to \$9,999 -----	-12.9	1.2	(X)	(X)
\$10,000 to \$24,999 -----	-15.5	1.2	-15.5	1.2
\$25,000 to \$49,999 -----	-12.3	1.4	-12.3	1.4
\$50,000 to \$99,999 -----	-7.8	1.5	-7.8	1.5
\$100,000 to \$249,999 -----	-4.8	1.1	-4.8	1.1
\$250,000 to \$499,999 -----	2.0	(L)	2.0	(L)
\$500,000 or more -----	18.3	(L)	18.3	(L)
Total farm production expenses ¹ -----\$1,000--	26.4	1.3	27.0	1.3
Average per farm -----dollars--	35.5	1.7	34.5	1.6
Net cash return from agricultural sales for the farm unit (see text) ¹ -----farms--	-6.7	1.1	-5.6	1.1
	\$1,000--	.6	9.0	.6
Average per farm -----dollars--	16.4	1.6	15.5	1.5
Operators by principal occupation:				
Farming -----	-4.0	.9	-5.3	.8
Other -----	-9.3	1.1	-6.7	1.2
Operators by days worked off farm:				
Any -----	-12.3	4.5	-9.5	4.6
200 days or more -----	-13.8	4.4	-10.4	4.6
Livestock and poultry:				
Cattle and calves inventory -----farms--	-13.7	.8	-10.4	.7
	number--	.2	3.1	.2
Beef cows -----farms--	-12.4	.9	-8.3	.9
	number--	.5	-5.3	.4
Milk cows -----farms--	-14.0	.5	-9.7	.4
	number--	.1	16.8	.1
Cattle and calves sold -----farms--	-16.0	.8	-11.2	.7
	number--	.2	-2.6	.2
Hogs and pigs inventory -----farms--	-17.7	1.2	-15.7	1.6
	number--	.7	87.1	1.8
Hogs and pigs sold -----farms--	-23.3	1.2	-13.5	1.6
	number--	.4	67.3	1.5
Sheep and lambs inventory -----farms--	-19.8	1.0	-20.3	1.0
	number--	.3	-12.3	.3
Chickens 3 months old or older inventory -----farms--	-32.9	.9	-32.5	1.0
	number--	.1	-26.7	.1
Broilers and other meat-type chickens sold -----farms--	-	2.2	8.6	2.2
	number--	.1	7.5	.1
Selected crops harvested:				
Wheat for grain -----farms--	-21.3	.6	-21.2	.6
	acres--	1.2	1.5	.4
	bushels--	-1.4	4	.4
Barley for grain -----farms--	-34.8	.7	-33.6	.7
	acres--	24.4	5	.5
	bushels--	-16.3	.5	-15.8
Rice -----farms--	-4.8	1.7	-5.1	1.7
	acres--	.5	1.2	.4
	cwt--	11.5	1.3	11.6
Cotton -----farms--	-22.6	.5	-21.6	.5
	acres--	-1.6	.1	-1.6
	bales--	6.6	.1	6.6
Hay—alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (see text) -----farms--	-12.7	.8	-10.3	.7
	acres--	-.1	.4	.4
	tons, dry--	3.6	.3	.3
Vegetables harvested for sale (see text) -----farms--	-2.0	.9	.6	.8
	acres--	15.2	.1	15.3
Land in orchards -----farms--	-1.8	1.0	-2.9	1.1
	acres--	4.3	.5	4.6

¹Data are based on a sample of farms.

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Table F. Reliability Estimates for the State and County Totals: 1992 —Con.

[For meaning of abbreviations and symbols, see introductory text]

Geographic area	Selected crops harvested—Con.			
	Land in orchards			
	Farms		Acres	
	Number	Relative standard error of estimate (percent)	Number	Relative standard error of estimate (percent)
California	40 298	.9	2 245 781	.4
Alameda	62	4.2	2 130	3.6
Alpine	—	—	—	—
Amador	131	2.0	3 465	2.5
Butte	1 247	1.0	72 103	.7
Calaveras	90	3.0	1 574	6.6
Colusa	290	1.7	22 915	.8
Contra Costa	241	1.9	5 420	2.3
Del Norte	4	18.9	13	30.8
El Dorado	296	1.4	3 136	1.8
Fresno	5 012	1.1	367 375	5
Glenn	442	1.6	39 104	.8
Humboldt	93	3.6	314	5.9
Imperial	54	3.9	2 969	1.9
Inyo	9	8.8	29	9.8
Kern	782	1.1	236 526	.2
Kings	376	1.5	22 587	.9
Lake	629	1.0	16 238	1.3
Lassen	9	7.0	27	9.9
Los Angeles	435	2.1	3 231	6.2
Madera	1 086	1.0	151 095	.4
Marin	17	7.7	167	8.3
Mariposa	32	5.4	191	6.8
Mendocino	438	1.5	18 438	1.0
Merced	1 399	1.1	117 902	.6
Modoc	5	15.5	33	21.7
Mono	8	11.2	63	17.6
Monterey	160	2.4	36 561	.4
Napa	1 017	.9	44 559	.5
Nevada	89	2.7	529	3.6
Orange	134	2.3	6 861	1.0
Placer	286	1.8	3 634	1.6
Plumas	2	18.2	(D)	(D)
Riverside	2 010	1.1	73 496	.5
Sacramento	251	1.9	15 796	.9
San Benito	239	1.8	8 661	1.8
San Bernardino	609	1.6	9 778	2.0
San Diego	5 051	.9	54 025	.8
San Francisco	—	—	—	—
San Joaquin	2 633	.9	148 608	.6
San Luis Obispo	624	1.5	20 593	1.7
San Mateo	34	5.6	384	7.4
Santa Barbara	708	1.6	23 862	.8
Santa Clara	390	1.6	5 012	2.0
Santa Cruz	343	2.4	8 902	1.7
Shasta	174	2.8	1 539	4.3
Sierra	1	37.3	(D)	(D)
Siskiyou	33	5.1	154	7.0
Solano	365	1.6	13 833	1.5
Sonoma	1 348	1.0	48 812	.6
Stanislaus	2 537	1.0	142 989	.6
Sutter	881	1.4	57 479	1.0
Tehama	685	1.1	35 422	.7
Trinity	32	4.7	145	8.0
Tulare	4 095	.8	282 903	.5
Tuolumne	26	5.7	276	11.1
Ventura	1 709	.8	58 710	.7
Yolo	367	1.7	23 752	1.1
Yuba	278	1.8	31 441	.8

¹Data are based on a sample of farms.

**Table G. State Estimates of the Not on the Mail List Component of Farm Coverage Error:
1992**

[Detail may not add to total due to rounding. For meaning of abbreviations and symbols, see introductory text]

Item	Census published farms		Not on mail list ¹		Percent not on mail list ¹	
	Total (number)	Relative standard error of estimate (percent)	Total (number)	Relative standard error of estimate (percent)	Total (percent)	Standard error of percent
Farms ----- number	77 669	.9	14 333	18.5	15.6	2.6
Land in farms ----- acres	28 978 997	.2	1 394 316	31.2	4.6	1.4
Average size of farm ----- acres	373.1	.9	97.3	34.2	(X)	(X)
Farms by size:						
Less than 10 acres -----	21 485	1.1	9 841	24.4	31.4	5.5
10 to 49 acres -----	26 089	1.0	2 741	19.6	9.5	1.8
Less than 50 acres -----	47 574	1.0	12 581	20.1	20.9	3.6
50 acres or more -----	30 095	.7	1 752	25.2	5.5	1.3
50 to 99 acres -----	7 934	1.0	504	38.3	6.0	2.2
100 to 179 acres -----	5 949	.9	236	47.8	3.8	1.8
180 acres or more -----	16 212	.6	1 012	32.3	5.9	1.8
Harvested cropland ----- farms	56 785	.9	6 378	19.9	10.1	2.0
acres	7 760 773	.3	131 330	21.7	1.7	.4
Farms by value of sales:						
Less than \$1,000 -----	15 058	1.1	6 862	25.3	31.3	5.4
\$1,000 to \$2,499 -----	7 634	1.2	4 049	43.3	34.7	9.8
Less than \$2,500 -----	22 692	1.1	10 910	23.7	32.5	5.2
\$2,500 or more -----	54 977	.9	3 423	20.3	5.9	1.1
\$2,500 to \$9,999 -----	14 577	1.1	2 316	25.7	13.7	3.0
\$10,000 or more -----	40 400	.9	1 106	27.8	2.7	.7
Market value of agricultural products sold --- \$1,000 ---	17 051 912	.1	146 298	27.0	.9	.2
Farms by standard industrial classification:						
Crops (01) -----	51 021	.9	5 686	21.7	10.0	2.2
Livestock (02) -----	26 648	.9	8 647	27.1	24.5	5.1
Farms by type of organization:						
Individual or family -----	60 187	.9	12 762	20.0	17.5	3.1
Partnership or corporation -----	16 417	.7	950	44.1	5.5	2.3
Other -----	1 065	1.3	478	59.6	31.0	12.9
Farms by tenure of operator:						
Full owners -----	56 559	.9	11 983	19.2	17.5	3.0
Part owners and tenants -----	21 110	.8	1 901	47.7	8.3	3.6
Part owners -----	11 471	.7	123	59.3	1.1	.6
Tenants -----	9 639	1.0	1 778	51.0	15.6	6.7
Operators by place of residence:						
On farm operated -----	51 485	.9	8 891	24.1	14.7	3.2
Not on farm operated -----	22 096	1.0	2 649	35.0	10.7	3.4
Not reported -----	4 088	.9	2 793	31.7	40.6	7.8
Operators by principal occupation:						
Farming -----	40 215	.8	2 669	56.2	6.2	3.3
Other -----	37 454	1.0	8 961	19.6	19.3	3.3
Operators by sex:						
Male -----	68 016	.8	9 634	16.1	12.4	2.0
Female -----	9 653	1.0	4 699	41.1	32.7	9.1
Operators by race:						
White -----	71 872	.9	10 127	23.3	12.4	2.6
Black and other races -----	5 797	1.1	1 503	46.1	20.6	7.8
Operators by years on present farm:						
4 years or less -----	11 765	1.3	5 156	24.2	30.5	5.4
5 years or more -----	56 058	.8	4 221	29.1	7.0	2.0
Average years on present farm -----	16.2	1.2	5.9	27.8	(X)	(X)
Not reported -----	9 846	.9	4 956	35.2	33.5	7.9
Average age of operator -----	55.2	1.2	45.8	20.8	(X)	(X)

Note: These estimates do not account for incorrectly classified farms or farms appearing more than once in the census and are subject to change in the 1992 Coverage Evaluation publication. See appendix C text for further explanation.

¹Estimates are based on a sample survey conducted independently of census data collection.